



Programming Guidelines – 75 MHz Appendix



Introduction

For all Official VEX & intelitek technical support, refer to www.VEXforum.com.
For all Official ROBOTC support refer to www.ROBOTC.net



When programming a VEX Robotics Competition Robot for autonomous competition, one needs three main things:

The first thing needed is the VEX Programming Cable which is available in the VEX Hardware Kit (276-2186) which interfaces between the computer and VEX robot and allows code to be downloaded into the robot. This kit is available from VEXrobotics.com for \$49.99.

The Programming Hardware Kit comes with no bundled software.

The second thing you need is the software to interface with the VEX microcontroller. This software is the “IFI_Loader” software. This comes prebundled with easyC & ROBOTC, and is also available as part of the MPLAB section of the Autonomous Files of this Appendix.

The third thing you need is software to write the code which will be used by the robot. There are currently four main options which can be used to program a robot for competition usage. You can program your robot using one of the following:

1. easyC v2.9.3.x (or newer) by intelitek
2. easyC PRO v3.1.3.x (or newer) by intelitek
3. C Language (using MPLAB and the C18 compiler) by MicroChip
4. ROBOTC by the CMU Robotics Academy

Each team will need to pick one of these options for their programming. For more information and the guidelines for competition usage for each of these options refer below.

easyC V2 by intelitek



<http://www.intelitekdownloads.com/easyCV2>

easyC is designed to be a bridge between pure object-oriented block-style programming, and the actual 'C' language. Programming is done with a drag-and-drop interface which allows the user to create flowchart type programs. As these flow charts are created, the easyC software will generate the corresponding C-code real time; this allows users to get a taste of the actual C-language while they program in easyC.

If a team wishes to program in easyC they need the following:

1. easyC Version 2.9.3.x (or newer)
 - a. This is available as a free 7-day trial for download from www.intelitekdownloads.com
 - b. This is available for purchase from www.vexrobotics.com under "Programming".
2. The newest version of the VEX Master Code (version 8 or higher).
 - a. This is included with the easyC loader.
3. Code must be created in an easyC Competition Project:
 - a. The duration of each Competition Project must be set for each of the Challenges of the VEX Robotics Competition:
 - i. VRC Tournament – Autonomous (20), Operator Control (254)
 - ii. VRC Programming Skills Challenge – Autonomous (60), Operator Control (0)
 - iii. VRC Robot Skills Challenge – Autonomous (0), Operator Control (60)

The competition template is essential, as it allows the robot to correctly transition between disabled, autonomous and enabled during matches.

Once all the required components are obtained, follow the instructions in the "easyC Autonomous Programming Guide" which is included in the Autonomous Files.



<http://www.intelitekdownloads.com/easyCPRO>

easyC PRO includes all the features of easyC V2 with the addition of a fully functional C text editor. This software is designed for the intermediate to advanced programmer that would like to transition from block programming to programming in the standard C language. easyC PRO also integrates some advanced features into the Online window to take full control of the VEX hardware manually with an easy to use interface. It is designed for engineering, programming, and robotics education.

If a team wishes to program in easyC PRO they need the following:

1. easyC PRO Version 3.1.3.x (or newer)
 - a. This is available as a free 7-day trial for download from www.intelitekdownloads.com
 - b. This is available for purchase from www.vexrobotics.com under “Programming”.
2. The newest version of the VEX Master Code (version 8 or higher).
 - a. This is included with the easyC loader.
3. Code must be created in an easyC Competition Project:
 - a. The duration of each Competition Project must be set for each of the Challenges of the VEX Robotics Competition:
 - i. VRC Tournament – Autonomous (20), Operator Control (254)
 - ii. VRC Programming Skills Challenge – Autonomous (60), Operator Control (0)
 - iii. VRC Robot Skills Challenge – Autonomous (0), Operator Control (60)

The competition project format is essential, as it allows the robot to correctly transition between disabled, autonomous and enabled during matches.

Once all the required components are obtained, follow the instructions in the “easyC Autonomous Programming Guide” which is included in the Autonomous Files.

ROBOTC by the CMU Robotics Academy

<http://www.robotc.net>

ROBOTC is designed for engineering, programming, and robotics education. It provides users with the opportunity to utilize standard C-language while also offering many integrated support features. These support features include the ability to real-time monitor motor and sensor values while stepping through the code. This debug helps users understand how their code is interacting with the robot itself.

If a team wishes to program using ROBOTC they need the following:

1. ROBOTC (v 1.40 or greater)
 - a. This is available as a free 30-day trial for download from www.ROBOTC.net
 - i. This is also included in the Autonomous Files provided.
 - b. This is available for purchase from www.vexrobotics.com under “Programming”

Once all the required components are obtained, follow the instructions in the “ROBOTC_140_VEX_Competition_Support.pdf” which is available in the Autonomous Files.

MPLAB by MicroChip



<http://www.microchip.com>

MPLAB is a true C environment, where users can write actual C code.

If a team wishes to program using MPLAB they need the following:

1. MPLAB IDE (6.62 or greater) with the C18 compiler.
 - a. This is available for purchase from: <http://www.vexrobotics.com> listed under “Programming”.
2. The most recent VEX Master Project File.
 - a. This includes:
 - i. The latest version of the VEX Master Code
 1. version 7 - “VEX_MASTER_V7.BIN”
 - ii. The correct library files.
 - b. This project file is available in the Autonomous Files.

Once all the required components are obtained, follow the instructions in the “MPLAB Autonomous Programming Guide” which is available in the Autonomous Files